Network Monitoring Tool Documentation for IT/CoreNetwork projects

Program Description

Network Switch Interface Monitoring Application

This application is designed to monitor and display the status of network switch interfaces, giving network administrators an organized view of each port's operational state. With multiple features, the program supports quick assessments of network health and performance.

Application Features

1. Port Statistics

The **Port Statistics** window provides an overview of active and inactive ports:

- **Active Ports**: Displays the total number of ports currently connected and active.
- **Inactive Ports**: Shows the total number of ports that are currently inactive or disconnected.

This summary allows administrators to quickly identify the number of ports in use versus those that are idle, providing a high-level view of port utilization.

2. Log Output

The **Log Output** window offers a real-time log of network events, showing:

- **Timestamp**: Indicates the exact time of each event.
- **Connection Status**: Logs connection attempts, successful data retrievals, and disconnections, each labeled with **INFO** messages for clarity.

This log is particularly valuable for troubleshooting as it provides a sequential history of actions, making it easy to identify recent events and connection issues.

3. Interface Information

The **Interface Information** table displays detailed data on each network interface:

- **Interface Status**: Interfaces in "DOWN" status are highlighted in red, while those in "UP" status are marked in green. This color-coding simplifies the process of identifying inactive ports.
- **Last Physical Down Time**: Records the last down time for each interface, allowing tracking of port stability.
- **Speed**: Displays the connection speed (e.g., 1000 Mbps or 10000 Mbps) to inform administrators about each port's bandwidth capacity.
- **Duplex Mode**: Indicates whether the interface operates in full-duplex mode, which supports simultaneous two-way communication.
- **Traffic Counters**: Includes data on transmitted and received traffic, helping monitor network load and diagnose potential issues related to traffic congestion or underutilization.

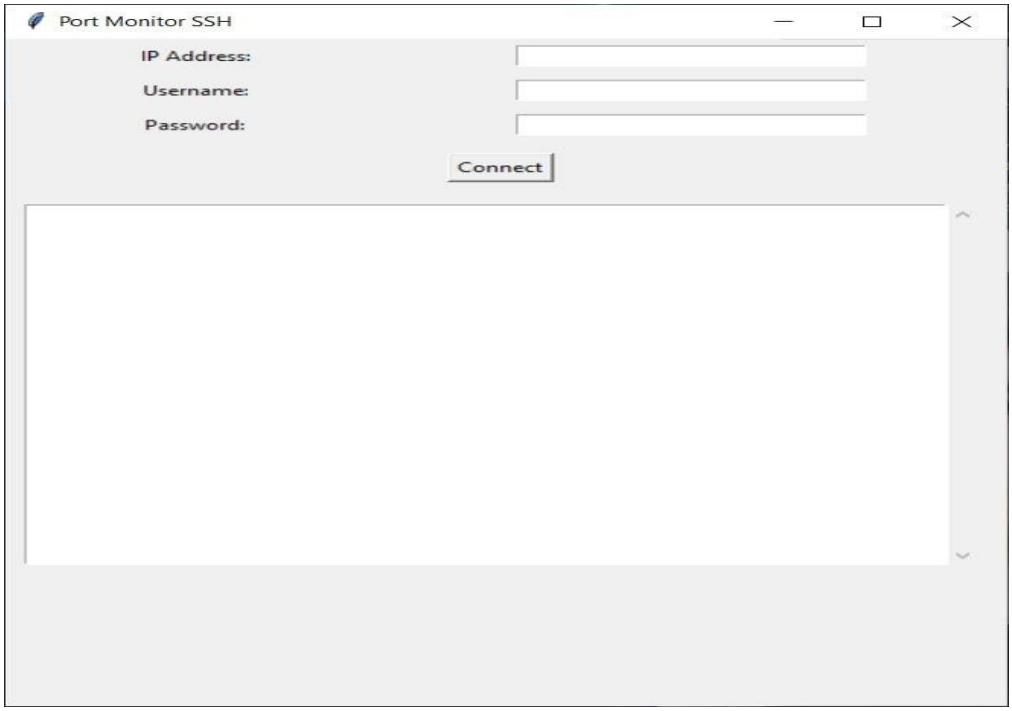
This feature-rich display enables efficient network monitoring, issue identification, and support for optimal network performance.

Interface Monitoring (Screenshots)

SSH Connection Interface (Screenshot 1)

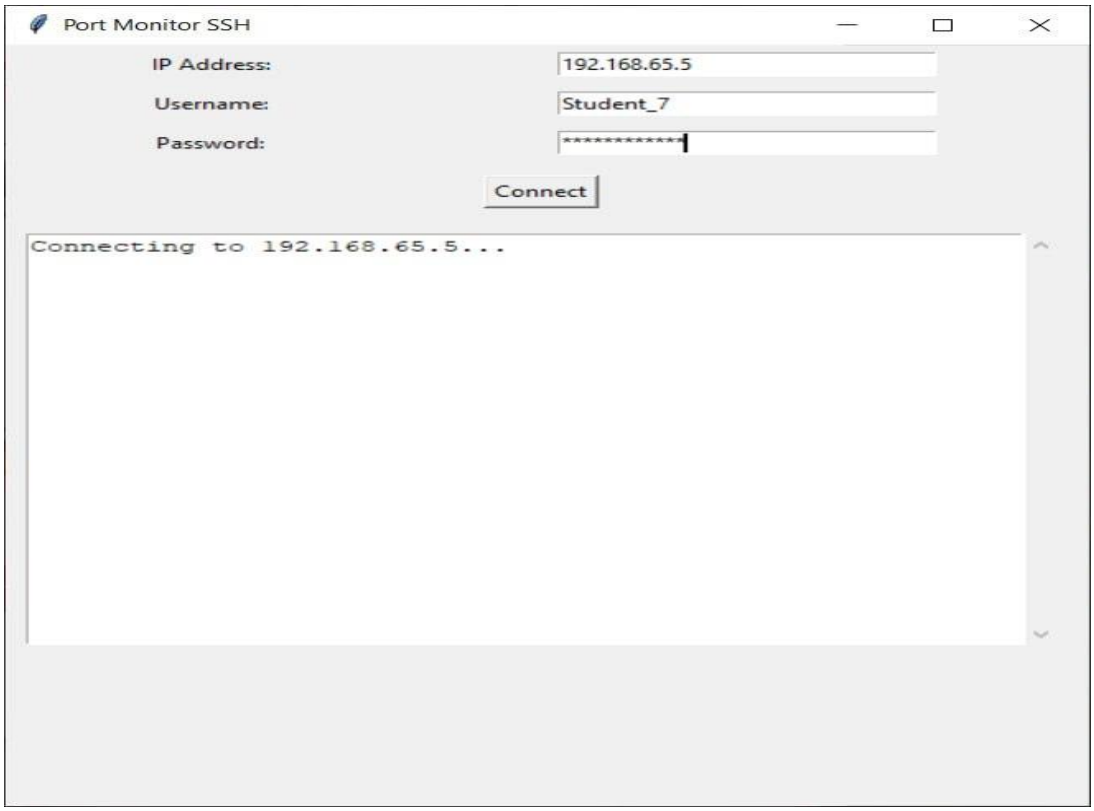
This screen displays:

- **IP Address**: for SSH connection.
- **Username** and **Password**: for authentication.
- **"Connect" Button**: to initiate the connection.



Connecting to Switch (Screenshot 2)

This screen shows the connection process to the switch at IP address 192.168.65.5 using the username Student_7.



Interface Information of the Switch (Screenshot 3)

After a successful connection, the application displays the status of each switch interface:

- Interfaces that are in **"DOWN"** status are highlighted in red.
- Interfaces that are in **"UP"** status are marked in green.
- Additional information includes **last down time**, **speed**, **duplex mode**, and **traffic counters**.

This documentation contains all necessary setup instructions for secure access, monitoring, and management of switches and other network devices. Please keep this document secure as it contains sensitive information.

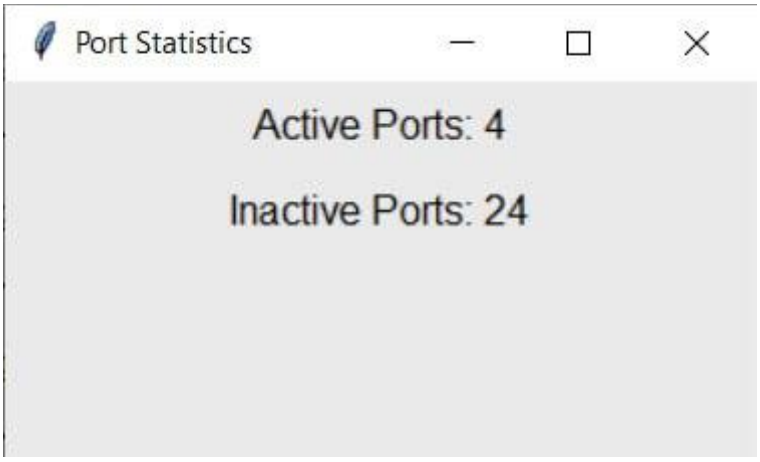
GigabitEthernet0/0/29	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/31	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/33	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/35	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/37	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/39	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/41	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/43	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/45	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/47	DOWN	DOWN	- Last physical down time : 2024-10-30 22:52:50	2024-10-30 22:52:50	1000	FULL,	0	0	0
GigabitEthernet0/0/1	UP	UP	2024-10-31 10:06:28	2024-10-31 09:58:45	10000	FULL,	26588617641	0	2621936361
GigabitEthernet0/0/2	UP	UP	2024-10-31 10:06:28	2024-10-31 09:58:45	10000	FULL,	26527109814	0	2666542731
GigabitEthernet0/0/3	UP	UP	2024-10-31 04:44:59	2024-10-31 04:44:57	10000	FULL,	2654897266	0	26527090781
GigabitEthernet0/0/4	UP	UP	2024-10-31 04:44:59	2024-10-31 04:44:57	10000	FULL,	2633556009	0	26588669977

Port Statistics (Screenshot 4)

After establishing a connection, the application displays the current status of ports:

- **Active Ports**: Displays the number of active ports currently connected.
- **Inactive Ports**: Shows the number of ports that are currently inactive.

This information allows the user to quickly assess the operational status of the network ports.

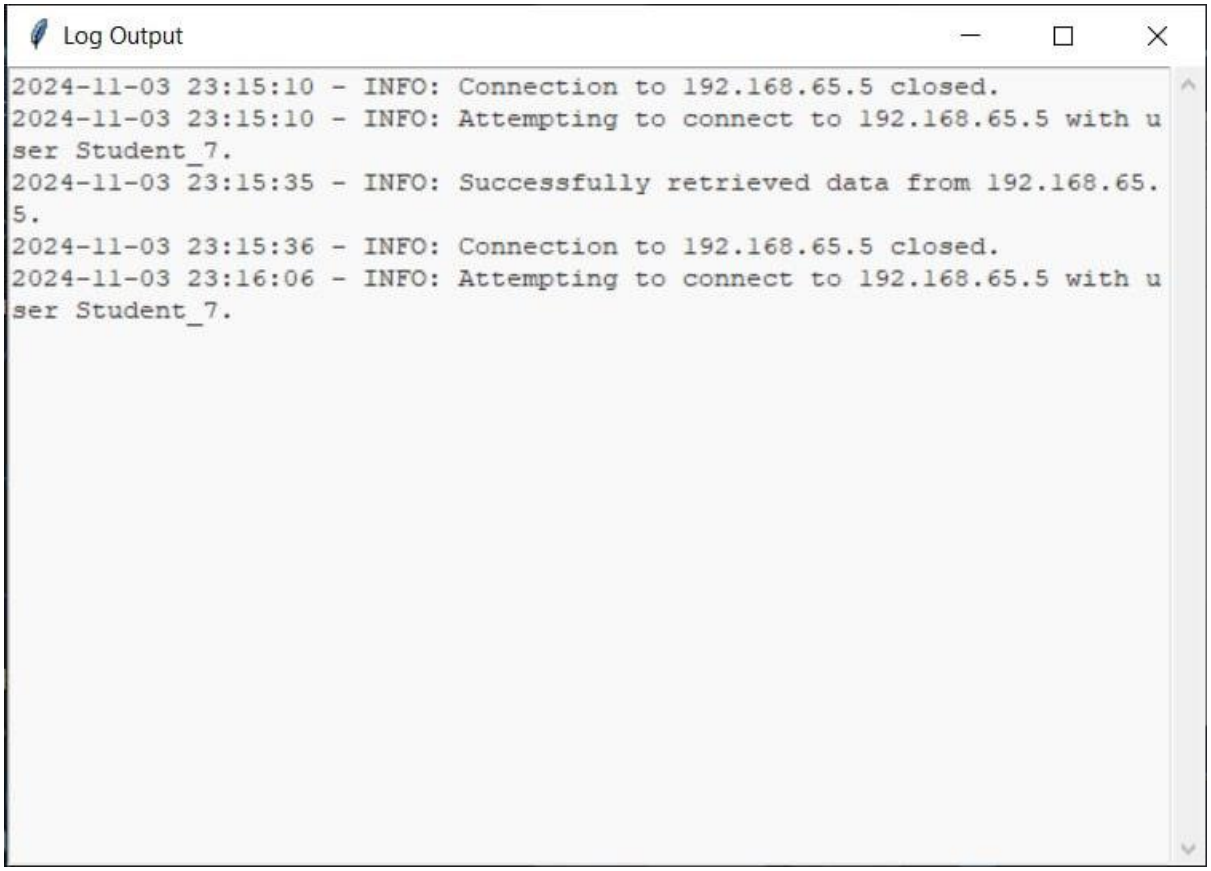


Log Output (Screenshot 5)

The Log Output provides a real-time record of connection attempts and status updates. It includes details such as:

- **Connection Attempts**: Logs each attempt to connect to a specified IP address with the designated user.
- **Connection Success**: Confirms successful data retrieval upon establishing a connection.
- **Connection Closure**: Records the closure of connections after data retrieval or user action.

Each entry in the log includes a timestamp, providing a clear sequence of events for troubleshooting or review purposes.



Security and Usage Notes

This documentation provides all necessary information for secure access, monitoring, and management of network switches and other devices. Due to the sensitive nature of network credentials and configurations, please keep this document secure. Use the application responsibly to avoid unauthorized access to network infrastructure.